



Hill Air Force Base, Utah

Final

**Environmental Assessment:
Proposed Well and Reservoir
(Roy City Corporation),
Hill Air Force Base, Utah**

June 9, 2006

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14. ABSTRACT Hill AFB will allow Roy City Corporation to provide improvements to its culinary water system. The proposed action, alternate locations, and the no action alternative were all considered. Temporary construction related emissions would be created. Long-term air emissions would be limited to operating the emergency generator approximately 100 hours per year. Solid and liquid wastes containing regulated products would all be properly stored, transported, disposed, re-used, and/or recycled. Secondary containment would be provided for 250 gallons of diesel fuel. Following construction, most of the area would be revegetated using a native-plant based seed mix. The area disturbed by construction activities would be restored to its original condition. If contaminated soils exist, they would be properly handled. Proper well abandonment and installation procedures would be followed. No adverse cumulative environmental impacts are expected.												
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Final
**Environmental Assessment (EA):
Proposed Well and Reservoir
(Roy City Corporation),
Hill Air Force Base, Utah**

Contract F42620-00-D0028, Delivery Order #0016

**Department of the Air Force
Air Force Materiel Command
Design Engineering Support Program (DESP)
Hill Air Force Base, Utah 84056**

June 9, 2006

Prepared in accordance with the Department of the Air Force Environmental Impact Analysis Process (EIAP) 32 CFR Part 989, Effective July 6, 1999, which implements the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) regulations.

EXECUTIVE SUMMARY

Purpose and Need

The purpose of the proposed action is to provide improvements to the culinary water system owned and operated by Roy City Corporation (Roy City). Roy City supplies drinking water to residents, commercial enterprises, and public agencies in Roy, Utah.

The proposed action is needed for the following reasons:

- Current water system pressures in the Roy City upper water zone (an area with approximately 10,000 residents, plus commercial users) are 35 pounds per square inch (psi) compared to the approximately 60 psi that is desired for fire fighting and general use.
- The Delta Formation, at approximately 1,000 feet below ground surface (bgs), possesses water of higher quality than the Sunset aquifer (at 500 ft bgs), where the existing well is screened.
- Roy City is currently deficient by 500,000 gallons of culinary water storage in its upper zone compared to what the State of Utah and calculations based on the 2003 *Uniform Fire Code* require, and the volume of deficiency is expected to increase in the near future.
- Neighboring cities have requested and want to purchase water from Roy City.

Scope of Review

During the scoping meetings and subsequent interactions, the following environmental issues were addressed:

- Air quality.
- Solid and hazardous wastes (including liquid waste streams).
- Biological resources.
- Geology and surface soils.
- Water quality.
- Cultural resources.
- Occupational safety and health.
- Air installation compatible use zone (AICUZ).
- Socioeconomic resources.

The issues that were identified for detailed consideration are: air quality; solid and hazardous wastes (including liquid waste streams); surface soils; water quality; and socioeconomics. Environmental impacts of the no action alternative and the proposed action were considered in detail.

Objectives (Selection Criteria)

The facility that accommodates the Roy City water system needs should:

- Provide approximately 60 psi of water pressure in the Roy upper zone.
- Improve drinking water quality related to the dissolved solids, metals, and taste and odor factors.
- Increase culinary water storage to a total of 2,000,000 gallons in the Roy upper zone.
- Not cause a significant impact to human health or the environment.

Alternatives

Proposed Action - The proposed action would include the following components:

- Abandoning the existing well.
- Removing the existing reservoirs and pump house.
- Installing a well in the Delta Formation at a depth of 1,000 feet bgs.
- Constructing a 2,000,000 gallon reservoir.
- Constructing a pump house with chlorination capability.
- Providing water pipes connecting to an existing Roy City water main.
- Upgrading the existing electrical service to the pump house.

No Action Alternative – Under the no action alternative, the stated objectives for Roy City to provide culinary water in its upper zone with the required pressure, desired quality, and required storage capacity would not be met. It is not known whether other means of providing water to these customers could be identified. Community growth could eventually be limited. Water shortages could occur. Fire suppression activities could be hampered.

Additional Alternatives - Roy City managers and their design engineers evaluated, but eliminated, other potential locations for siting the improved upper zone facilities. These alternatives were not retained for detailed consideration due to presence of contaminated soils and inability to provide the required water pressure.

Results of the Environmental Assessment

The no action alternative and the proposed action were both considered in detail. No long-term environmental impacts are expected from either the no action alternative or the proposed action. The proposed action would satisfy the objectives and selection criteria. The no action alternative would not satisfy the stated objectives and selection criteria.

Summary Comparison of Alternatives

Issue	Alternative A No Action	Alternative B Proposed Action
Air Quality	No impacts were identified.	<p>Temporary construction related emissions would be created.</p> <p>Long-term air emissions would be limited to operating the emergency generator approximately 100 hours per year. Preventive maintenance would reduce the potential for chlorine gas leaks. Emergency responders are available should a chlorine gas leak occur.</p>
Solid and Hazardous Wastes	No impacts were identified.	<p>Solid and liquid wastes containing regulated products would all be properly stored, transported, disposed, re-used, and/or recycled. Secondary containment would be provided for 250 gallons of diesel fuel.</p>
Biology	No impacts were identified.	<p>Approximately three acres would be disrupted during construction. Following construction, most of the area would be revegetated using a native-plant based seed mix. The net loss of habitat would be a few thousand square feet.</p>
Surface Soils	No impacts were identified.	<p>During construction, erosion would be controlled by implementing a stormwater pollution prevention plan. The area disturbed by construction activities would be restored to its original condition to prevent long term soil erosion.</p> <p>If contaminated soils exist, they would be properly handled during the construction process.</p>

Issue	Alternative A No Action	Alternative B Proposed Action
Water Quality (Groundwater)	Culinary water could be pumped from the Sunset Aquifer should the currently out-of-service facilities be returned to service. This water exhibits taste and odor problems.	Following proper well abandonment and installation procedures would protect the Sunset and Delta Aquifers. Nearby contaminated shallow groundwater would not impact or be impacted by the proposed action. Supplying water from the Delta Aquifer should prevent taste and odor problems from occurring.
Water Quality (Surface Water)	No impacts were identified.	A stormwater pollution prevention plan would be implemented during construction. Roy City holds a current UPDES permit for discharging well development and pump testing water to an existing storm drain.
Socioeconomics	Shortfalls could occur in water supply, pressure, and quality. Economic growth could be limited for Roy City and surrounding communities.	Short-term opportunities would exist for local construction workers. Less than one long-term job equivalent would be created. Economic growth could be enhanced for Roy City and the surrounding communities.

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LIST OF ACRONYMS AND CHEMICAL TERMS

AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zone
bgs	Below the Ground Surface
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
DAQ	Division of Air Quality (Utah)
DDW	Division of Drinking Water (Utah)
DRMO	Defense Reutilization and Marketing Office
DSHW	Division of Solid and Hazardous Waste (Utah)
DWR	Division of Water Rights (Utah)
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EPA	Environmental Protection Agency (United States)
FONSI	Finding of No Significant Impact
gpm	gallons per minute
HAP	Hazardous Air Pollutant
ICRMP	Integrated Cultural Resources Management Plan
IDT	Interdisciplinary Team
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
mg/ℓ	milligrams per liter

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO _x	Oxides of Nitrogen
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
pH	negative logarithm of the hydrogen ion activity
PM-10	Particulates Smaller Than 10 Microns in Diameter
psi	pounds per square inch
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SO _x	Oxides of Sulfur
TCE	Trichloroethene
TDS	Total Dissolved Solids
UAC	Utah Administrative Code
µg/ℓ	micrograms per liter
UPDES	Utah Pollutant Discharge Elimination System
US	United States
USAF	United States Air Force
VOC	Volatile Organic Compound

1.0 Purpose of and Need for Action

The purpose of the proposed action is to provide improvements to the culinary water system owned and operated by Roy City Corporation (Roy City). Roy City supplies drinking water to residents, commercial enterprises, and public agencies in Roy, Utah.

1.1 Proposed Action

1.1.1 Summary of the Proposed Action

Roy City currently owns one acre of land within the boundaries of Hill Air Force Base (AFB). On this property, there are two existing culinary water reservoirs totaling 1,250,000 gallons of storage. There is also a 500 foot deep culinary water well. The existing Roy City well and reservoirs have not been in use since 2003. Roy City proposes to improve this portion of its water system beginning in July, 2006, in response to State of Utah regulations and increasing demand.

The proposed action would include three major components:

- **Easement:**

An easement of 1.48 acres of Hill AFB property (surrounding one acre of Roy City property) located on the northwestern portion of Hill AFB is needed to construct a portion of the improved facilities. An existing easement of 1.48 acres would be vacated. A temporary construction easement of an additional 0.54 acres would also be granted.

- **Removal:**

The removal component would include abandoning the existing 500 foot deep well. It would also include removing the existing two reservoirs and pump house. The existing facilities to be removed are located on Roy City property.

- **Construction:**

The construction component would include installing a new 1,000 foot deep well. It would also include constructing a 2,000,000 gallon reservoir, a pump house with chlorination capability, providing connecting water pipes, and upgrading the existing electrical service to the pump house. The well and pump house would be installed on Roy City property. The new reservoir would be constructed on the easement (Hill AFB property).

1.1.2 Location Map

Hill AFB is located at the north boundary of Layton, Utah and approximately seven miles south of downtown Ogden, Utah. Hill AFB is surrounded by several communities, including: Roy to the northwest; Riverdale to the north; South Weber to the east; Layton to the south; and Clearfield, Sunset, and Clinton to the west. The base lies primarily in northern Davis County with a small portion located in southern Weber County. The proposed well and reservoir would be located in the extreme northwestern portion of the base (Figure 1), just inside the base property on the east side of Interstate Highway 15.

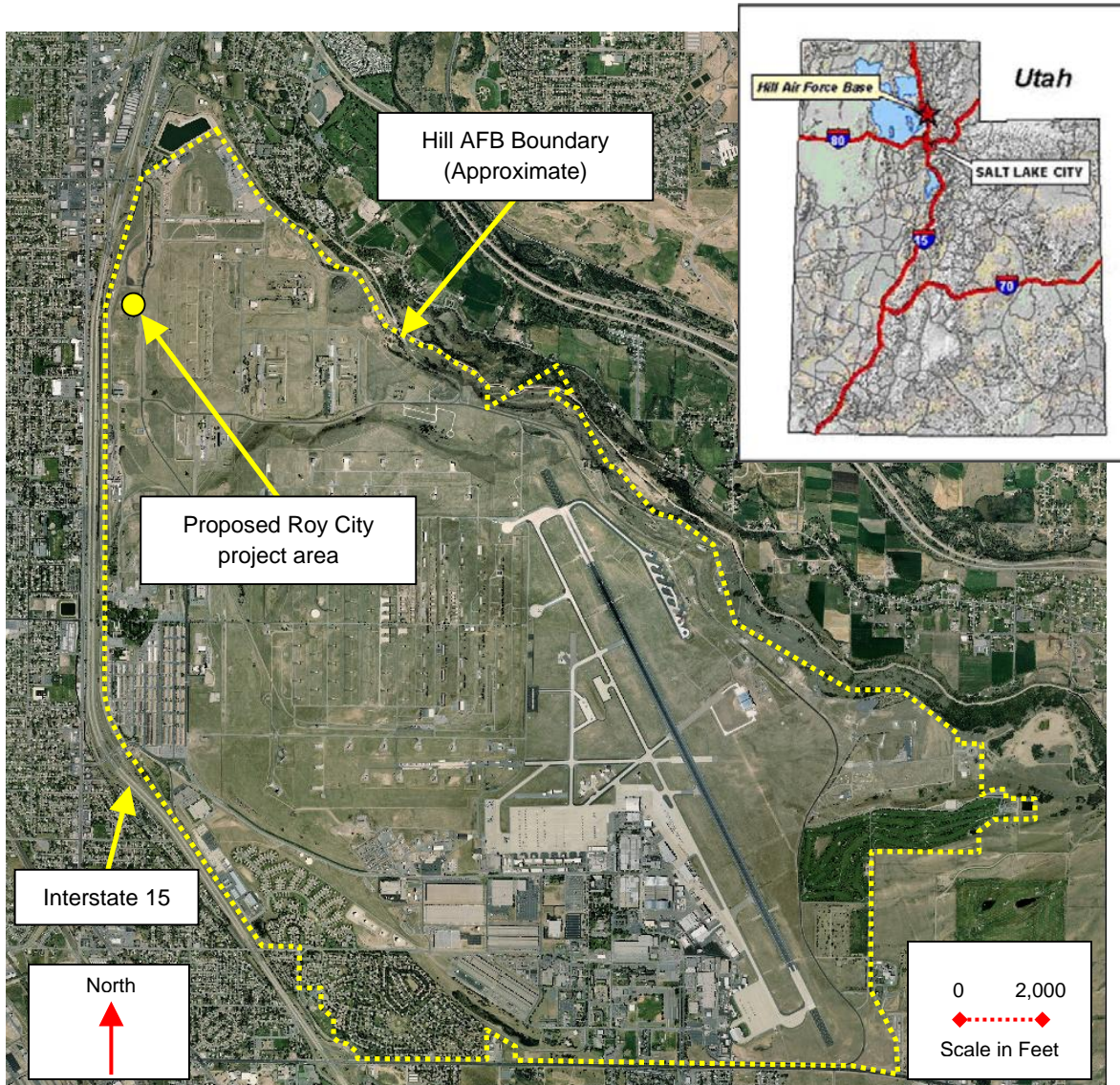


Figure 1: Location of the Proposed Well and Reservoir

Hill AFB land use in the vicinity of the proposed action (Figure 2) consists of open grassy areas and roadways. Immediately south and east of the proposed easement lies Roy City's one acre inholding, upon which the two existing reservoirs and well are located.

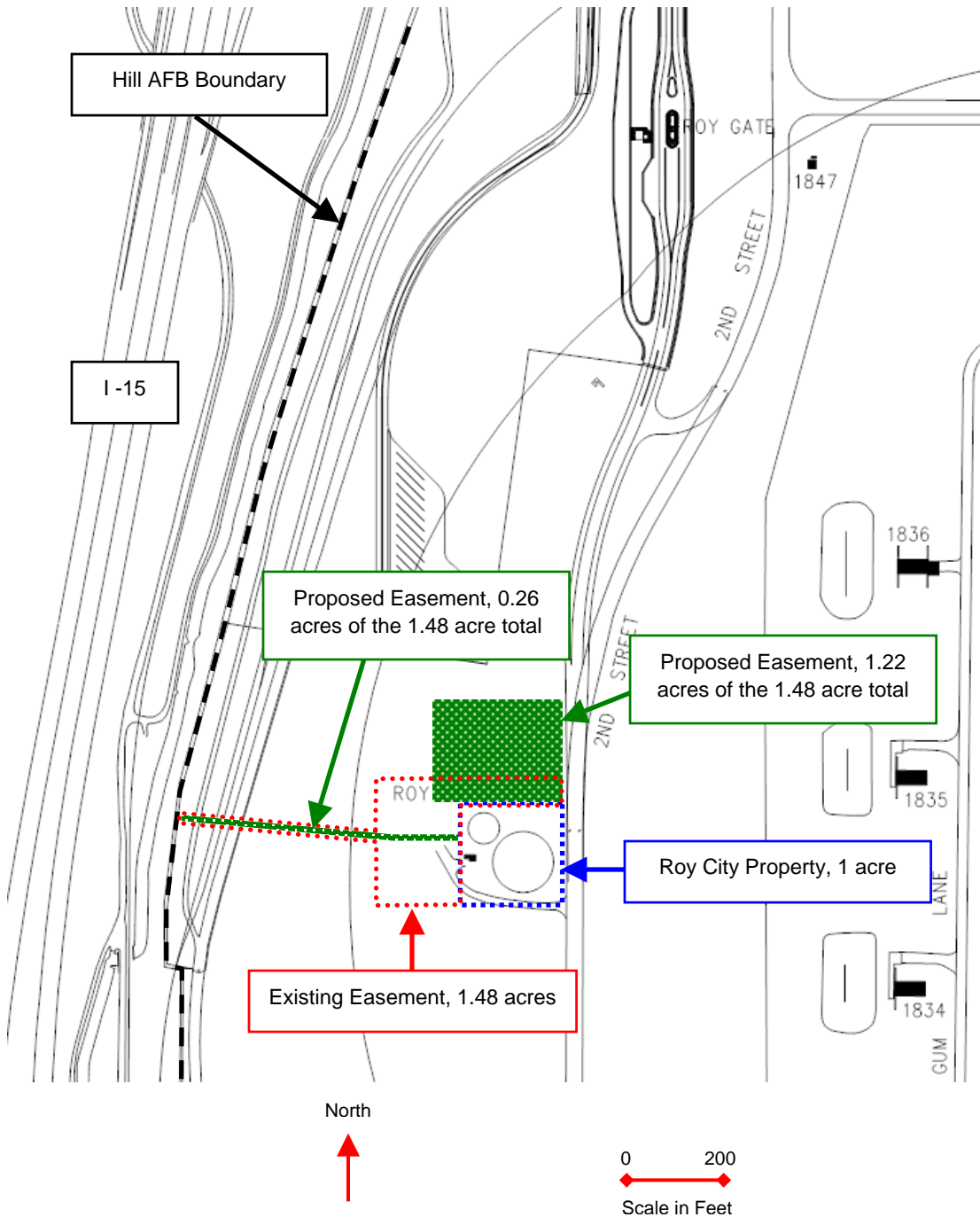


Figure 2: Specific Components of the Proposed Action

1.2 Need for the Proposed Action

The proposed action is needed for the following reasons:

- Current water system pressures in the Roy City upper water zone (an area with approximately 10,000 residents, plus commercial users) are 35 pounds per square inch (psi) compared to the approximately 60 psi that is desired for fire fighting and general use.
- The Delta Formation, at approximately 1,000 feet bgs, possesses water of higher quality than the Sunset aquifer (at 500 ft bgs), where the existing well is screened.
- Roy City is currently deficient by 500,000 gallons of culinary water storage in its upper zone compared to what the State of Utah and calculations based on the 2003 *Uniform Fire Code* require (Jones 1997), and the volume of deficiency is expected to increase in the near future.
- Neighboring cities have requested and want to purchase water from Roy City.

1.3 Objectives

Due to needs stated in Section 1.2, the following objectives (or selection criteria) were established. The facility that accommodates the Roy City water system needs described in this document should:

- Provide approximately 60 psi of water pressure in the Roy upper zone.
- Improve drinking water quality related to the dissolved solids, metals, and taste and odor factors described in Sections 3 and 4 of this document.
- Increase culinary water storage to a total of 2,000,000 gallons in the Roy upper zone.
- Not cause a significant impact to human health or the environment.

1.4 Applicable Regulations and Permits

The following federal, state, and local regulations and permits would apply to the proposed action:

- The National Environmental Policy Act (NEPA) of 1969.
- Council on Environmental Quality regulations.

- United States Air Force (USAF) specific requirements contained in Title 32 of the Code of Federal Regulations (CFR) Part 989, Environmental Impact Analysis Process (EIAP).
- Occupational Safety and Health Administration (OSHA) guidelines and relevant USAF occupational safety and health standards.
- Utah's fugitive emissions and fugitive dust rules (Utah Administrative Code [UAC] Section R307-309).
- Utah's State Implementation Plan (SIP) (UAC Section R307-110), which complies with the General Conformity Rule of the Clean Air Act (CAA), Section 176 (c).
- *Determining Conformity of Federal Actions to State or Federal Implementation Plans*, 40 CFR 93.154.
- The Hill AFB Title V Operating Permit (Permit Number: 1100007001).
- The Resource Conservation and Recovery Act (RCRA) and similar laws.
- A federal facility agreement under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).
- Utah hazardous waste management regulations contained in UAC Section R315, and the *Hill AFB Hazardous Waste Management Plan*.
- The Safe Drinking Water Act (SDWA), Utah Drinking Water Regulations for construction, design and operation of water system facilities contained in UAC Section R309, and *Administrative Rules for Well Drillers* published by the Utah Division of Water Rights (DWR) in UAC Section R655-4.
- The Clean Water Act (CWA), and the Utah Pollutant Discharge Elimination System (UPDES).

1.5 Scoping and Issues

The scope of the environmental analysis was to explore environmental issues related to abandoning and removing existing facilities, and constructing the proposed well and reservoir.

1.5.1 Scoping

Scoping discussions were held to identify potential environmental concerns and to facilitate an efficient environmental analysis process. Relevant issues and reasonable alternatives were identified for detailed presentation in this document.

Scoping expedites the overall process by ensuring that the environmental analysis adequately addresses issues and alternatives.

On February 9, 2006, an initial scoping meeting was conducted in the offices of Wasatch Civil Consulting Engineering, Inc. in Roy, Utah. Attendees included proponents of the proposed action (Roy City managers and their design engineers), representatives from Hill AFB, and the authors of this document.

On February 16, 2006, a second scoping meeting was conducted in Building 5, Hill AFB. Attendees included representatives from the Hill AFB interdisciplinary team (IDT) and the authors of this document.

During these meetings and subsequent scoping interactions, relevant environmental issues were identified. These issues are discussed in Section 1.5.2.

1.5.2 Issues

As directed by the Air Force's EIAP, the following areas of potential impacts were considered.

- **Air Quality** (attainment status, emissions, Utah's SIP)

During the construction activities, air emissions would be produced by heavy equipment. For the purposes of this document, construction activities are defined as abandonment, removal, demolition, and new construction.

Operating the proposed facilities would not create regulated air emissions, but an accidental release of chlorine gas could occur. Air quality impacts are discussed in Section 4 of this document.

- **Solid and Hazardous Wastes** (materials to be used, stored, recycled, disposed, including liquid waste streams; existing asbestos, lead-based paint, mercury, and polychlorinated biphenyls [PCBs])

During the construction activities, solid wastes would be generated and hazardous wastes might be generated that would require proper treatment and/or disposal. Additional hazardous wastes could be generated if a spill of fuel, lubricants, or construction related chemicals were to occur. Operating the proposed facilities would create solid and possibly hazardous wastes (to include solid and liquid wastes).

Other than discharges to a Roy City storm drain discussed below, wastewater discharges are not anticipated as a result of the construction activities or operating the proposed facilities.

Impacts related to solid and hazardous wastes are discussed in Section 4 of this document.

- **Biological Resources** (threatened or endangered species, wetlands, floodplains)

No species of plants or animals listed as threatened or endangered are known to occur on Hill AFB (Hill AFB 2005a; Hill AFB 2005b). There are no wetlands or floodplains in the vicinity of the proposed action. Constructing the proposed action would displace plants and animals in the immediate vicinity. Impacts related to biological resources are discussed in Section 4 of this document.

- **Geology and Surface Soils** (known pre-existing contamination, seismicity, topography, minerals, geothermal resources)

Other than groundwater quality issues discussed below, geologic impacts are not anticipated as a result of the construction activities or operating the proposed facilities.

During the construction activities, excavations would be completed to remove existing facilities and install the proposed facilities. Contamination of shallow soil is known to exist in the vicinity of the proposed action. Impacts related to soil contamination are discussed in Section 4 of this document.

The scoping discussions did not identify any issues related to seismicity, topography, minerals, or geothermal resources.

- **Water Quality** (known pre-existing contamination, quantity, wellhead protection zones)

Liquid waste streams created during construction and from operating the proposed facilities are included in the discussions related to solid and hazardous wastes (Section 4 of this document).

Roy City proposes to discharge water from well development and pump tests (clean groundwater) to a Roy City storm drain, which already exists at this site on the property owned by Roy City. No other surface water resources exist within the immediate area of the proposed action. Erosion and sediment control issues would exist during the construction period.

Hill AFB conducts groundwater monitoring of the shallow, unconfined aquifer near the proposed action. Contamination has been detected in wells approximately to the west of the proposed action. The measured depth to groundwater near the proposed action is approximately 60 feet bgs (personal communication, Mark Roginske).

The scoping discussions did identify issues related to quantity of water, quality of water, and wellhead protection zones. Impacts related to water quality are discussed in Section 4 of this document.

- **Cultural Resources** (archaeological, architectural, traditional cultural properties)

No cultural resources (defined as archaeological, architectural, or traditional cultural properties) have been identified within the boundaries of or adjacent to the proposed action. According to the Hill AFB *Integrated Cultural Resources Management Plan* (ICRMP) published in 2005, due to the extensive development of Hill AFB, there is no need for additional archaeological survey. There are no suspected impacts to cultural resources.

If any cultural resources were to be identified during construction activities, ground-disturbing activities in the immediate vicinity would cease and the Hill AFB Cultural Resources Management Program manager would be notified. Inadvertent discovery procedures would then be implemented with direction from the Hill AFB Cultural Resources Management Program manager in accordance with the Hill AFB ICRMP.

- **Occupational Safety and Health** (physical and chemical hazards, radiation, explosives, bird and wildlife hazards to aircraft)

Roy City employees and their contractors would comply with standards enforced by OSHA. These standards address (partial list): construction safety; hazard communication; training; personal protective equipment and engineering controls to ensure that occupational exposures to hazardous agents do not adversely affect health and safety; and emergency response.

The scoping discussions did not identify any issues related to occupational safety and health that would not be addressed by providing and enforcing standard OSHA compliance measures.

- **Air Installation Compatible Use Zone (AICUZ)** (noise, accident potential, airfield encroachment)

The scoping discussions did not identify any issues related to noise, aircraft accident potential, or airfield encroachment.

- **Socioeconomic Resources** (local fiscal impacts including employment; population projections; schools)

Short-term opportunities would exist for local construction workers. The proposed action is not expected to create any long-term jobs. Increasing the local water supply would support anticipated growth in population, employment, and school enrollment in and around Roy City and Hill AFB. Impacts related to socioeconomics are discussed in Section 4 of this document.

1.5.3 Issues Carried Forward for Detailed Analysis

The following issues were selected for detailed analysis that will be presented in Sections 3 and 4 of this document:

- Air quality.
- Solid and hazardous wastes (including liquid waste streams).
- Biological resources.
- Surface soils.
- Water quality.
- Socioeconomics.

2.0 Explanation of Alternatives

Roy City managers and their design engineers developed reasonable alternatives for siting the proposed facilities. This section describes those alternatives (identified during the scoping process) and which of them would satisfy the objectives and selection criteria (from Section 1.3). Section 2.3 presents a summary comparison of the alternatives that were analyzed in detail in terms of the relevant environmental issues (see section 1.5.3).

2.1 Alternatives Analyzed in Detail

2.1.1 Alternative A - No Action

Under the no action alternative, the stated objectives for Roy City to provide culinary water in its upper zone with the required pressure, desired quality, and required storage capacity would not be met. It is not known whether other means of providing water to these customers could be identified. Community growth could eventually be limited. Water shortages could occur. Fire suppression activities could be hampered.

2.1.2 Alternative B - Proposed Action

The proposed action includes all work necessary to:

- Increase the pressure of water delivered to the upper elevations of Roy City.
- Improve drinking water quality.
- Increase water storage capacity for fire fighting.
- Provide additional daily water flows to Roy City and surrounding municipalities to meet increasing demand for culinary water.

Roy City is requesting an easement of 1.48 acres on Hill AFB (adjacent to the one acre Roy City inholding) on which to construct a portion of the improved facilities (the reservoir, associated piping, and the upgraded electrical service). In addition to the proposed easement of 1.48 acres, a temporary construction easement of 0.54 acres would be granted by Hill AFB to Roy City. An existing easement of 1.48 acres would be vacated. Existing Roy City water pipes and electric cables are routed across 0.26 acres of the existing easement (these 0.26 acres are also included in the proposed easement). The well and pump house would be constructed on the one acre Roy City inholding.

The proposed action would include the following components:

- Abandoning the existing well.
- Removing the existing reservoirs and pump house.
- Installing a well in the Delta Formation at a depth of 1,000 feet bgs.
- Constructing a 2,000,000 gallon reservoir.
- Constructing a pump house with chlorination capability.
- Providing water pipes connecting to an existing Roy City water main.
- Upgrading the existing electrical service to the pump house.

The configuration of the proposed action would occur partly on Roy City property and partly on the proposed easement (Hill AFB property), as follows:

- **On Roy City Property** (abandonment and removal)

Abandon one existing well according to procedures approved by the Utah DWR. Remove and dispose two existing reservoirs, one pump house, and the piping that conveys water between the pump house and the two reservoirs. Backfill open trenches. The depth of excavation would be approximately 10 feet. The entire site would be disturbed. Revegetate disturbed areas other than where new facilities would exist.

- **On Roy City Property** (new construction)

Drill and develop a 16-inch diameter culinary water well with a submersible pump capable of producing flows up to 2,500 gallons per minute (gpm). The screened interval would be in the Delta formation approximately 1,000 feet bgs. Construct a pump house including a chlorination system with two steel holding tanks of 12 gallon liquid pressurized gas capacity each. Upgrade the existing electric power supply to power the pump. Install an emergency power generator with an attached 250 gallon diesel fuel tank. Install piping to convey water from the pump house to the property boundary at a depth of approximately five feet bgs. Provide an access road. The depth of excavation would be approximately 10 feet. The entire site would be disturbed. Revegetate disturbed areas other than where new facilities would exist.

- **On Hill AFB Property** (new construction)

Construct a 2,000,000 gallon concrete reservoir and access road. Install piping to convey water from the Roy City inholding property boundary to the proposed reservoir, and additional piping to convey water from the proposed reservoir to the existing Roy City culinary water system, all at a depth of approximately five feet bgs. Replace existing electric cable and conduit with new electric cable and conduit of higher capacity, at a depth of approximately five feet bgs. The depth of excavation for the reservoir would be

approximately 20 feet. The entire site would be disturbed. Revegetate disturbed areas other than where new facilities would exist.

2.2 Alternatives Eliminated from Further Consideration

Roy City managers and their design engineers evaluated, but eliminated, other potential locations for siting the improved upper zone facilities.

One alternative would have been to construct the well and reservoir within the boundaries of the existing easement. This alternative will not be considered in detail for the following reasons. The property within the boundaries of the existing easement was identified as being part of a disposal area after the existing easement was signed. Hazardous waste drums and contaminated soils have been found in the disposal area, though not in the portions covered by the easement to Roy City. The Utah Division of Drinking Water (DDW) may not allow Roy City to drill the well and construct the reservoir unless the debris, including any contaminated soils, is removed prior to installing the well and reservoir. To negotiate cleanup criteria for this site, develop an approved remedial action plan, and complete remediation would take approximately three years. Roy City has identified regulatory deficiencies in their current water system and needs to begin construction in July of 2006.

Another alternative would have been to construct the well and reservoir in Roy City, but not on Hill AFB property. This alternative will not be considered in detail for the following reasons. Roy City managers searched for but could not identify any off-base locations that would provide the required water pressure and water storage capacity. Roy City managers and their design engineers concluded that only sites on Hill AFB would provide sufficient acreage on which to construct the 2,000,000 gallon reservoir and produce the required water pressure.

2.3 Summary Comparison of Alternatives

The no action alternative and the proposed action were both considered in detail. No long-term environmental impacts are expected from either the no action alternative or the proposed action. The proposed action would satisfy the objectives and selection criteria presented in Section 1.3. The no action alternative would not satisfy the stated objectives and selection criteria. Table 1 compares the alternatives that were considered in detail, by summarizing how they differ in regard to their respective impacts pertaining to the relevant environmental issues.

Issue	Alternative A No Action	Alternative B Proposed Action
Air Quality	No impacts were identified.	Temporary construction related emissions would be created. Long-term air emissions would be limited to operating the emergency generator approximately 100 hours per year. Preventive maintenance would reduce the potential for chlorine gas leaks. Emergency responders are available should a chlorine gas leak occur.
Solid and Hazardous Wastes	No impacts were identified.	Solid and liquid wastes containing regulated products would all be properly stored, transported, disposed, re-used, and/or recycled. Secondary containment would be provided for 250 gallons of diesel fuel.
Biology	No impacts were identified.	Approximately three acres would be disrupted during construction. Following construction, most of the area would be revegetated using a native-plant based seed mix. The net loss of habitat would be a few thousand square feet.

Issue	Alternative A No Action	Alternative B Proposed Action
Surface Soils	No impacts were identified.	<p>During construction, erosion would be controlled by implementing a stormwater pollution prevention plan. The area disturbed by construction activities would be restored to its original condition to prevent long term soil erosion.</p> <p>If contaminated soils exist, they would be properly handled during the construction process.</p>
Water Quality (Groundwater)	<p>Culinary water could be pumped from the Sunset Aquifer should the currently out-of-service facilities be returned to service. This water exhibits taste and odor problems.</p>	<p>Following proper well abandonment and installation procedures would protect the Sunset and Delta Aquifers. Nearby contaminated shallow groundwater would not impact or be impacted by the proposed action.</p> <p>Supplying water from the Delta Aquifer should prevent taste and odor problems from occurring.</p>
Water Quality (Surface Water)	No impacts were identified.	<p>A stormwater pollution prevention plan would be implemented during construction. Roy City holds a current UPDES permit for discharging well development and pump testing water to an existing storm drain.</p>
Socioeconomics	<p>Shortfalls could occur in water supply, pressure, and quality. Economic growth could be limited for Roy City and surrounding communities.</p>	<p>Short-term opportunities would exist for local construction workers. Less than one long-term job equivalent would be created.</p> <p>Economic growth could be enhanced for Roy City and the surrounding communities.</p>

Table 1: Summary Comparison of Alternatives

3.0 Affected Environment

This section discusses the existing environment. It is presented in the same order as the issues and resources that were identified for detailed analysis in Section 1.5.3.

3.1 Air Quality

Hill AFB is located in Davis and Weber Counties, Utah. Neither county is in complete attainment status with federal clean air standards (Figure 3). Nonattainment areas fail to meet national ambient air quality standards (NAAQS) for one or more of the criteria pollutants: oxides of nitrogen (NO_x), sulfur dioxide (SO_2), ozone (O_3), particulates less than 10 microns in diameter (PM-10), carbon monoxide (CO), and lead. Davis County was upgraded from an ozone non-attainment area to a maintenance area, effective 1997. Current status according to the Utah Division of Air Quality (DAQ 2005) for the City of Ogden in Weber County (approximately seven miles north of the proposed action) is designation as a non-attainment area for PM-10 and a maintenance area for CO.

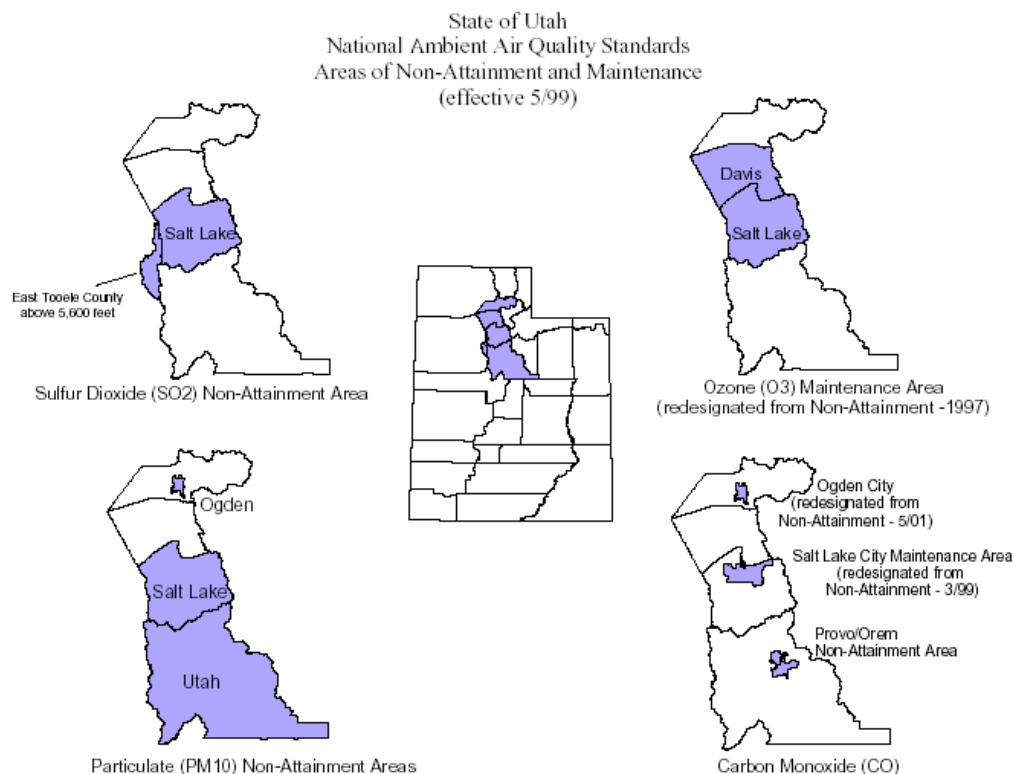


Figure 3: State of Utah National Ambient Air Quality Standards, Areas of Non-Attainment and Maintenance (Effective 5/99)

The current air quality trend at Hill AFB is one of controlling emissions in compliance with the base's Title V air quality permit. Hill AFB managers have implemented programs to eliminate ozone-depleting substances, limit use of volatile organic compounds (VOCs), switch to lower vapor pressure solvents and aircraft fuel, convert internal combustion engines from gasoline and diesel to natural gas, and improve the capture of particulates during painting and abrasive blasting operations.

No air emissions are currently produced by the existing Roy City well, reservoir, or pump house. There is no chlorination equipment nor is there an emergency generator present at this time.

3.2 Solid and Hazardous Wastes

In general, hazardous wastes include substances that, because of their concentration, physical, chemical, or other characteristics, may present substantial danger to public health or welfare or to the environment when released into the environment or otherwise improperly managed. Potentially hazardous and hazardous wastes generated at Hill AFB are managed as specified in the *Hill AFB Hazardous Waste Management Plan* with oversight by Hill AFB environmental managers and the Defense Reutilization and Marketing Office (DRMO). Hazardous wastes at Hill AFB are properly stored during characterization, and then manifested and transported off site for treatment and/or disposal.

Related to solid and hazardous wastes (including liquid waste streams), no wastes are currently being generated at the existing Roy City well, reservoir, or pump house (none of which has been used since 2003).

3.3 Biological Resources

The existing habitat in the vicinity of the proposed action is classified as Big Sage habitat. Because of apparent human disturbances, Big Rabbitbrush, a plant that indicates habitat disturbance, has replaced Big Sage as the dominant shrub.

The area was evaluated in terms of native and invasive plant species, along with wildlife species. The total vegetative plant cover is approximately 86 percent. Of this total, native plants occupy 61 percent. The top three dominant native plants are common Ragweed Ambrosia, Big Rabbitbrush, and Purple Three Awn. The remaining vegetative plant cover consists of invasive plants, such as Bulbous Bluegrass, Crested Wheatgrass, and Cheatgrass.

The health of the plant community was evaluated using the Range Health Index (RHI) developed by the Hill AFB Natural Resources Program. This index establishes a value ranging from .01 to 1.0, using the percent cover of native and invasive plant species to derive the final score. Data from 120 transect points indicate the RHI value for this area is 0.81.

Avian species observed were Black-billed Magpie, European Starling, Western Meadowlark, and Northern Flicker. No mammals were directly observed. Tracks and scat indicated the presence of Mule Deer, Red Fox, and Lagomorphs (examples of Lagomorphs are rabbits, hares, and pikas). Rodent burrows and burrowed trails were observed in abundance.

3.4 Surface Soils

Surface soils in the vicinity of proposed action are flat to gently sloping. They are presently covered with a concrete water tank, a pump house, a dirt road, and the vegetation described above.

Shallow soil contamination is present in the Aspen Avenue Debris Area, which is located to the west and southwest of the proposed action (Figure 4). In the northern debris area, a drum containing trichloroethene (TCE) has been located. Large pieces of subsurface concrete and other construction debris have hampered site characterization activities, but the results of a soil gas survey indicate TCE contamination is present.

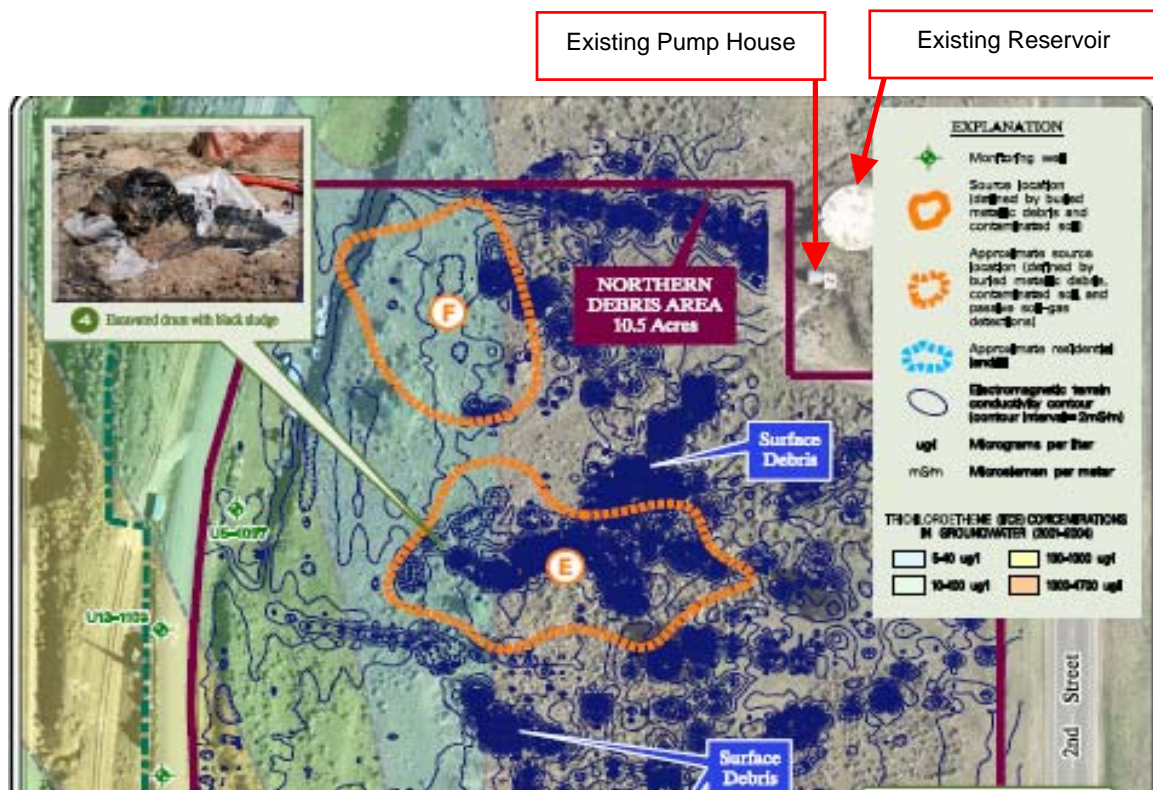


Figure 4: Northern Portion of the Aspen Avenue Debris Area

(Source: MWH 2005)

3.5 Water Quality

3.5.1 Groundwater

Figure 4 shows that contaminated groundwater is present to the west of the proposed action, beneath the Aspen Avenue Debris Area. TCE is the primary contaminant of concern. The groundwater contamination is limited to the shallow unconfined aquifer, at a depth of approximately 60 feet bgs (personal communication, Mark Roginske).

The deeper aquifers (Sunset and Delta) are not known to be contaminated, and currently produce culinary water for Roy City and the surrounding communities. Water pumped from the Sunset Aquifer has been noted to possess taste and odor problems, possibly due to its manganese and iron content. Recent analytical results for the Sunset and Delta Aquifers are presented in Table 2 (Wasatch 2006a).

Parameter	Units	Sunset Aquifer	Delta Aquifer
pH	n/a	8.1	7.98
Ammonia	(mg/l)	0.29	<0.05
Potassium	(mg/l)	3	1.24
Bicarbonate	(mg/l)	290	189
Fluoride	(mg/l)	0.15	0.15
Nitrate	(mg/l)	0.03	0.17
Sulfate	(mg/l)	15	14.1
Total Hardness	(mg/l)	181	162
Carbonate Solids	(mg/l)	143	93
Calcium	(mg/l)	46	45.3
Magnesium	(mg/l)	16	11.9
Sodium	(mg/l)	27	19.4
Carbon Dioxide	(mg/l)	3	3
Chloride	(mg/l)	20.3	16.5
Silica	(mg/l)	18	18.4
Barium	(mg/l)	0.52	0.2
Iron	(mg/l)	0.82	0.036
Manganese	(µg/l)	200	18.2
TDS	(mg/l)	292	221

mg/l = milligrams per liter

µg/l = micrograms per liter

TDS = total dissolved solids

Table 2: Current Water Quality in the Sunset and Delta Aquifers

3.5.2 Surface Water

An existing Roy City storm drain is present on the property owned by Roy City, but it is not being used at this time. No other surface water features exist within the immediate area of the proposed action.

3.6 Socioeconomics

Hill AFB, located in both Davis and Weber Counties, employs over 23,500 people (USAF 2005). The 2004 combined employed workforces of Davis and Weber Counties was approximately 230,000 (Davis 2005, Weber 2005). There are no jobs associated with the existing Roy City well, reservoir, or pump house (none of which has been used since 2003).

4.0 Environmental Impacts

This section discusses impacts to the resources that were identified for detailed analysis in Section 1.5.3. For each resource, the following analyses are presented:

- Direct impacts of no action.
- Direct impacts of the proposed action.
- Indirect impacts.
- Cumulative impacts.

4.1 Air Quality

4.1.1 Impacts of No Action

4.1.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related air quality impacts associated with the no action alternative.

4.1.1.2 Direct Impacts of Operations

The current condition of no air emissions would continue under the no action alternative.

4.1.2 Impacts of the Proposed Action

4.1.2.1 Direct Impacts of Construction

- **Fugitive Dust:** Emissions of PM-10 would be produced as soil is disturbed during proposed construction activities. The United States (US) Environmental Protection Agency (EPA) has estimated that fugitive dust emissions from construction activities produce 0.11 tons of PM-10 per acre per month (EPA 1996). The proposed action would involve an estimated seven days of scraping, grading, excavation, and backfill activities (personal communication, John Bjerregaard) over an area of approximately three acres. Fugitive dust emissions of 0.1 tons of PM-10 were therefore calculated for the proposed action.

Fugitive emissions from construction activities should be mitigated according to UAC Section R307-205, *Emission Standards: Fugitive Emissions and Fugitive Dust*. Good housekeeping practices should be used to maintain construction opacity at less than 20 percent. Haul roads should be kept wet. Any soil that is deposited on nearby paved roads by construction vehicles

should be removed from the roads and either returned to the site or placed in an appropriate disposal facility.

- **Heavy Equipment:** The internal combustion engines of heavy equipment would generate emissions of VOCs, CO, NO_x, PM-10, hazardous air pollutants (HAPs), and oxides of sulfur (SO_x). Assumptions and estimated emissions for the construction period are listed in Table 2.

Data Assumptions							
Equipment Type	Diesel Emission Factor (lbs/hr)						
	VOC (HC)	CO	NO_x	PM10	HAPs	SO_x	
Concrete Truck	0.80	3.55	8.50	0.69	0.15	0.72	
Crane	2.14	6.96	17.08	2.39	0.33	1.54	
Drill Rig	1.85	11.76	14.08	1.84	0.26	1.19	
Dump Truck	0.63	2.04	6.98	0.58	0.16	0.65	
Loader/Backhoe	0.87	4.12	6.12	0.64	0.06	0.52	
Motored Grader	0.83	2.01	5.08	0.53	0.06	0.46	
Scraper	0.33	2.31	4.03	0.58	0.13	0.42	
Track Hoe	0.91	6.65	13.75	1.84	0.26	1.19	
Vibratory Compactor	0.38	1.44	4.31	0.36	0.09	0.46	
Water Truck	1.10	3.58	12.28	1.02	0.28	1.14	
Note: VOCs = Hydrocarbons and HAPs = Aldehydes							
Source: Industry Horsepower Ratings and EPA 460/3-91-02							
Proposed Roy City Well and Reservoir							
EQUIPMENT TYPE	HOURS OF OPERATION	Diesel Emissions (lbs)					
		VOC	CO	NO_x	PM10	HAPs	SO_x
Concrete Truck	24	19.2	85.2	204.0	16.6	3.6	17.3
Crane	8	17.1	55.7	136.6	19.1	2.6	12.3
Drill Rig	270	499.5	3175.2	3801.6	496.8	70.2	321.3
Dump Truck	20	12.6	40.8	139.6	11.6	3.2	13.0
Loader/Backhoe	20	17.4	82.4	122.4	12.8	1.2	10.4
Motored Grader	16	13.3	32.2	81.3	8.5	1.0	7.4
Scraper	4	1.3	9.2	16.1	2.3	0.5	1.7
Track Hoe	40	36.4	266.0	550.0	73.6	10.4	47.6
Vibratory Compactor	8	3.0	11.5	34.5	2.9	0.7	3.7
Water Truck	5	5.5	17.9	61.4	5.1	1.4	5.7
TOTAL ESTIMATED EMISSIONS (lbs)		625.4	3776.1	5147.5	649.3	94.8	440.3
TOTAL ESTIMATED EMISSIONS (tons)		0.31	1.89	2.57	0.32	0.05	0.22

Source of Hours: Discussions With John Bjerregaard, Wasatch Civil Consulting Engineering

Table 3: Calculated Heavy Equipment Emissions

The proposed construction activities would require less than two months to complete. For construction projects under six months in duration, no applicability analysis or conformity determination is required (personal communication, Tad Anderson).

4.1.2.2 Direct Impacts of Operations

- **Emergency Generator:** The emergency generator would produce minor air emissions. Assuming the generator would be tested for 30 minutes per week and operate several times per year for several hours duration each time, an annual operating time of 100 hours was estimated. Table 3 presents the calculated emissions from the emergency generator on an annual basis.

Test and Operate an Emergency Generator							
EQUIPMENT TYPE	HOURS PER YEAR	Diesel Emissions (lbs)					
		VOC	CO	NOx	PM10	HAPs	SOx
Generator	100	2.0	10.0	12.0	2.0	0.0	1.0
TOTAL ESTIMATED EMISSIONS (lbs)		2.0	10.0	12.0	2.0	0.0	1.0

Table 4: Emissions From an Emergency Generator

- **Chlorine Gas:** The chlorination equipment to be operated in the pump house would include two steel cylinders, each containing a maximum of 12 gallons of compressed chlorine gas. Roy City managers would notify the Hill AFB Fire Department of the storage and use of chlorine gas on the Roy City property.

The chlorine cylinders would be delivered by Roy City employees. The cylinders would be installed and tested for leaks by Roy City employees following Roy City's chlorine gas handling procedures (provided by Thatcher Chemical [Thatcher 2006]).

Roy City managers would install safety equipment related to the storage and use of chlorine gas (Wasatch 2006b). Chlorine cylinders supplying chlorine gas to the system would sit on an electronic scale. The weights of the cylinders would be monitored to ensure that change in weight is consistent with the chlorine feed rate. Chlorine warning signs would be placed in the chlorine room and on the outside of the door to the chlorine room. Self contained breathing apparatus would be stored in the building. An electronic chlorine detector would be installed in the chlorine room. The detector would activate a red warning light on the outside of the building if chlorine gas were to be detected. The detector would also send an alarm by radio or phone to the Roy City managers through a supervisory control and data acquisition (SCADA) system.

In the event of a chlorine leak, Roy City employees could respond from Roy City within ten minutes. Roy City employees would also call 911 to summon municipal hazardous materials response teams and/or the Hill AFB Fire Department. The reportable quantity of chlorine is 10 pounds. If an amount equal to or greater than 10 pounds of chlorine were to be released within a 24 hour period in a manner that would expose persons outside the pump station,

Roy City managers would notify federal, state, and local agencies as required by 40 CFR 355.40.

Based on interviews with Roy City managers and their design engineers, no other sources of air emissions were identified for operating the proposed facilities. Conformity with the CAA was determined to exist.

4.1.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to air quality were identified for either the no action alternative or the proposed action.

4.1.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to air quality were identified for the no action alternative.

The construction practices mentioned above would mitigate or eliminate releases of fugitive dust. Emissions from heavy equipment would be temporary. The emergency generator would produce approximately 27 pounds of pollutants per year. Chlorine releases are not expected, but a release would be limited to 12 gallons should a full cylinder fail. No cumulative impacts related to air quality were identified for the proposed action.

4.2 Solid and Hazardous Wastes

4.2.1 Impacts of No Action

4.2.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to solid and hazardous wastes associated with the no action alternative.

4.2.1.2 Direct Impacts of Operations

The current condition of no waste generation would continue under the no action alternative.

4.2.2 Impacts of the Proposed Action

4.2.2.1 Direct Impacts of Construction

- **Waste Generation:** During the proposed construction activities, solid wastes expected to be generated would be construction debris consisting mainly of concrete, metal, and building materials. These items would be treated as uncontaminated trash. It is possible that equipment failure or a spill of fuel,

lubricants, or construction related chemicals could generate solid or hazardous wastes. In the event of a spill of regulated materials, Roy City managers and their contractors would comply with all federal, state, and local spill reporting requirements.

- **Waste Management:** Roy City managers and their contractors would be responsible for collecting solid non-hazardous wastes and transporting them to a construction debris landfill. Any hazardous wastes from cleaning up leaks or spills would be labeled, transported, treated, and disposed in accordance with federal and state regulations under the direction of Roy City managers and their contractors.
- **Drilling Fluids:** Roy City managers and their contractors would be collect all drill cuttings, mud, and fluids for use as clean fill in Roy City. If no areas are identified where fill is required, the materials would be disposed in a construction debris landfill.
- **Excavated Soils:** If excavated soils from Hill AFB property exhibit suspicious odors or appearance, the following standard procedures would apply. Samples from suspect wastes on Hill AFB are analyzed for hazardous vs. non-hazardous determination. The suspect wastes are stored at sites operated in accordance with the requirements of 40 CFR 265 while analytical results are pending. Hazardous wastes are eventually labeled, transported, treated, and disposed in accordance with federal and state regulations. On Hill AFB, contaminated soils are placed in the Hill AFB construction debris landfill. No soil leaves the base without approval from Hill AFB environmental managers.

If excavated soils from Roy City property exhibit suspicious odors or appearance, Roy City managers and their contractors would follow the same procedures as described in the preceding paragraph, except the disposal facility would be a permitted facility designated by Roy City.

The potential for contaminated surface soils to create a hazardous waste stream is discussed in Section 4.4.2.1.

4.2.2.2 Direct Impacts of Operations

- **Containment:** The proposed pump house would be provided with proper secondary containment and security for storing up to 250 gallons of diesel fuel for the emergency generator. The secondary containment could be provided by a double-walled fuel tank, a large spill containment pallet, or the structural design of the pump house itself. A dry chemical fire extinguisher (rated 2A-10BC) would be placed in the pump house and maintained by Roy City employees.

- ***Non-Regulated Wastes:*** Operating the proposed facilities is not expected to generate non-regulated wastes. Any occasional items that might be generated would be disposed as uncontaminated trash.
- ***Regulated Solid Wastes:*** Maintaining the emergency generator would generate occasional wipes, rags, oil filters, and possibly a few ounces per year of bearing grease. All non-recyclable items would be collected and disposed as hazardous waste. Roy City managers would notify the Hill AFB hazardous materials manager of the storage or use of hazardous materials related to operating and maintaining facilities or equipment discussed in this document.
- ***Regulated Liquid Wastes:*** Maintaining the emergency generator would generate small quantities of used motor oil for which recycling opportunities are likely to exist. Any oil not meeting recycling criteria would be collected in containers, labeled, and transported off base to be treated and/or disposed in accordance with federal and state regulations by Roy City employees.

Operating the proposed facilities is not expected to generate any other regulated liquid waste streams. Any spilled liquids would be captured in the secondary containment and either recycled or collected and used as product. Roy City managers would notify the Hill AFB hazardous materials manager of the storage or use of hazardous liquids related to operating and maintaining facilities or equipment discussed in this document.

4.2.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to solid and hazardous wastes were identified for either the no action alternative or the proposed action.

4.2.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to solid and hazardous wastes were identified for the no action alternative.

Proper handling of solid and hazardous wastes during construction and operations would eliminate releases of contaminants to the environment. There would be no cumulative solid or hazardous waste impacts associated with the proposed action.

4.3 Biological Resources

4.3.1 Impacts of No Action

4.3.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to biological resources associated with the no action alternative.

4.3.1.2 Direct Impacts of Operations

With respect to biological resources, current conditions would continue under the no action alternative (see Section 3.3).

4.3.2 Impacts of the Proposed Action

4.3.2.1 Direct Impacts of Construction

No plant or animal species listed as threatened or endangered by state or federal agencies are known or likely to occur within the boundaries of or near the proposed action. No plant or animal species listed as threatened, endangered, or sensitive by federal or state agencies were observed within the boundaries of or near the proposed action. No suitable habitat for any such species will likely be impacted by the proposed action.

During construction, vegetation would be removed, and any animal species present would be temporarily displaced. The area consists of likely feeding and resting areas for avian and mammal species. The area has a relative high RHI score due to its high native to invasive plant cover ratio. There are two trees within the boundaries of the proposed action that may need to be removed. They both are Silver Maples.

The area disturbed by construction activities (approximately three acres) would be backfilled, graded, and subsequently revegetated using a native-plant based seed mix specified by the Hill AFB Natural Resources Program manager (Hill AFB 2006). The net loss of habitat would be a few thousand square feet. Two water tanks would be removed from service and one larger water tank would replace them. One pump house would be removed from service and replaced in kind. One well would be removed from service and replaced in kind. A small amount of additional dirt road would exist compared to current conditions.

The Hill AFB Integrated Natural Resources Management Plan (INRMP) describes a policy of no net loss of natural resources on Air Force properties. Although the area of the proposed project site is small, efforts would be made by Hill AFB natural resources managers to improve another big sage habitat area on Hill AFB.

4.3.2.2 Direct Impacts of Operations

Operating the proposed facilities would not create any interaction with biological resources, and therefore, no impacts to biological resources were identified.

4.3.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to biological resources were identified for either the no action alternative or the proposed action.

4.3.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to biological resources were identified for the no action alternative.

Approximately three acres would be affected by the proposed action. Following construction, most of the area would be revegetated. The net loss of habitat would be a few thousand square feet. Hill AFB natural resources managers intend to improve another big sage habitat area on Hill AFB. No cumulative impacts to biological resources were identified for the proposed action.

4.4 Surface Soils

4.4.1 Impacts of No Action

4.4.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to surface soils associated with the no action alternative.

4.4.1.2 Direct Impacts of Operations

With respect to surface soils, current conditions would continue under the no action alternative (see Section 3.4).

4.4.2 Impacts of the Proposed Action

4.4.2.1 Direct Impacts of Construction

Surface soils may be compacted by construction vehicles during the proposed action. Annual winter frost heave activity (from the freezing of normal soil moisture) would later counteract the compaction process.

Construction projects can increase soil erosion. Most of the area of proposed construction is relatively flat and the potential for erosion is therefore small. Roy City managers and their contractors would mitigate any erosion potential that

does exist by requiring the contractor to restore the land to its original condition. The area disturbed by construction activities would be backfilled and subsequently revegetated to prevent soil erosion. Preventing soil erosion during construction activities is also required to comply with stormwater pollution prevention rules. Since the proposed action would disturb more than one acre, a stormwater pollution prevention plan would be prepared and implemented prior to initiating any site-disturbing activities.

If suspected or actual shallow soil contamination were to be identified in any excavation completed on Hill AFB property (due to suspicious odors or appearance), it would be addressed by the Hill AFB Installation Restoration Program (IRP) and the Hill AFB soil policy, based upon the type of contamination present and its origin, either according to RCRA requirements, or the conditions of a federal facility agreement regulated by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Waste management procedures for excavated soils are described in Section 4.2.2.1.

If suspected or actual shallow soil contamination were to be identified in any excavation completed on Roy City property, Roy City managers would follow similar procedures as described in the preceding paragraph, except the investigation and any required remediation would be negotiated by Roy City managers and representatives from the Utah Division of Solid and Hazardous Waste (DSHW).

4.4.2.2 Direct Impacts of Operations

Operating the proposed facilities would not create any interaction with surface soils, and therefore, no impacts to surface soils were identified.

4.4.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to surface soils were identified for either the no action alternative or the proposed action.

4.4.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to surface soils were identified for the no action alternative.

Proper handling of excavated soils during construction would eliminate releases of contaminants to the environment. There would be no cumulative surface soil impacts associated with the proposed action.

4.5 Water Quality

4.5.1 Groundwater

4.5.1.1 Impacts of No Action

4.5.1.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to groundwater associated with the no action alternative.

4.5.1.1.2 Direct Impacts of Operations

With respect to groundwater, current conditions would continue under the no action alternative (see Section 3.5.1). Culinary water could be pumped from the Sunset Aquifer should the currently out-of-service facilities be returned to service.

4.5.1.2 Impacts of the Proposed Action

4.5.1.2.1 Direct Impacts of Construction

The existing Roy City well is screened at a depth of approximately 500 feet bgs in the Sunset Aquifer. This well would be abandoned in compliance with specifications published by the design engineers (Wasatch 2006c) and *Administrative Rules for Well Drillers*, UAC Section R655-4. Following these procedures would protect water quality in the Sunset Aquifer.

A 16-inch diameter well would be drilled and developed in the Delta Aquifer. The screened interval would be located at a depth of approximately 1,000 feet bgs. This well would be drilled and developed in compliance with specifications published by the design engineers (Wasatch 2006d) and *Administrative Rules for Well Drillers*, UAC Section R655-4. Following these procedures would protect water quality in the Delta Aquifer.

The contaminated shallow groundwater discussed in Section 3.5.1 lies to the west of the proposed action at a depth of approximately 60 feet bgs. Groundwater in the vicinity of the proposed action flows to the west toward the Great Salt Lake. The contaminated shallow groundwater is therefore downgradient of the proposed action. The contaminated shallow groundwater would not impact or be impacted by constructing the proposed action.

4.5.1.2.2 Direct Impacts of Operations

The proposed facilities would withdraw up to 2,500 gpm of water from the Delta Aquifer through a 16-inch diameter well. Roy City possesses sufficient water rights to accommodate the anticipated withdrawals.

Analytical results for the Sunset and Delta Aquifers are presented in Table 2. The Delta Aquifer can be seen to possess water of higher quality for metals, TDS, and hardness. The concentrations of manganese and iron (suspected to cause taste and odor problems in water pumped from the Sunset Aquifer) are significantly lower in the Delta Aquifer than in the Sunset Aquifer.

4.5.1.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to groundwater were identified for either the no action alternative or the proposed action.

4.5.1.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to groundwater were identified for the no action alternative.

Following proper well abandonment procedures would protect water quality in the Sunset Aquifer. Following proper well installation procedures would protect water quality in the Delta Aquifer. The nearby contaminated shallow groundwater would not impact or be impacted by constructing the proposed action. There would be no cumulative groundwater impacts associated with the proposed action.

4.5.2 Surface Water

4.5.2.1 Impacts of No Action

4.5.2.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to surface water associated with the no action alternative.

4.5.2.1.2 Direct Impacts of Operations

Current conditions of no surface water impacts would continue under the no action alternative.

4.5.2.2 Impacts of the Proposed Action

4.5.2.2.1 Direct Impacts of Construction

Since the proposed action would disturb approximately three acres, the construction activities would be covered under Utah's general construction permit for stormwater compliance. Coverage under this permit must be obtained and erosion and sediment controls must be installed according to a stormwater pollution prevention plan prior to initiating any ground-disturbing activities.

Roy City's contractors would discharge water from well development and pump tests (clean groundwater) to a Roy City storm drain, which already exists on the property owned by Roy City. This discharge would be consistent with an existing UPDES permit held by Roy City.

4.5.2.2.2 Direct Impacts of Operations

Operating the proposed facilities would not create any interaction with surface water, and therefore, no impacts to surface water were identified.

4.5.2.3 Indirect Impacts

During scoping and the detailed analysis, no indirect impacts related to surface water were identified for either the no action alternative or the proposed action.

4.5.2.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to surface water were identified for the no action alternative.

A stormwater pollution prevention plan would be implemented during construction. Roy City holds a current UPDES permit for discharging well development and pump testing water to an existing storm drain. There would be no cumulative surface water impacts associated with the proposed action.

4.6 Socioeconomics

4.6.1 Impacts of No Action

4.6.1.1 Direct Impacts of Construction

There would be no construction, and therefore, no construction related impacts to socioeconomics associated with the no action alternative.

4.6.1.2 Direct Impacts of Operations

With respect to socioeconomics, current conditions would continue under the no action alternative (see Section 3.6).

4.6.2 Impacts of the Proposed Action

4.6.2.1 Direct Impacts of Construction

The proposed construction would require less than two months to complete. Short-term opportunities would exist for local construction workers.

4.6.2.2 Direct Impacts of Operations

Operating and maintaining the proposed facilities would require a few hundred hours per year on the part of Roy City employees. This fraction of one full-time equivalent employee would be a minor positive effect on the local economy, compared to 230,000 existing jobs in Davis and Weber Counties.

4.6.3 Indirect Impacts

The no action alternative could result in shortfalls in water supply, pressure, and quality. Economic growth could be limited for Roy City and the surrounding communities that also want access to this water supply.

The proposed action would result in supplying the desired quantities of water at the required pressure and quality. Economic growth could be enhanced for Roy City and the surrounding communities that also want access to this water supply.

4.6.4 Cumulative Impacts

During scoping and the detailed analysis, no cumulative impacts related to socioeconomics were identified for the no action alternative other than the indirect impacts mentioned in Section 4.6.3.

During scoping and the detailed analysis, no cumulative impacts related to socioeconomics were identified for the proposed action other than the indirect impacts mentioned in Section 4.6.3.

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FINDING OF NO SIGNIFICANT IMPACT

1. NAME OF ACTION: Proposed Well and Reservoir (Roy City Corporation [Roy City]), Hill Air Force Base (AFB), Utah.

2. DESCRIPTION OF THE PROPOSED ACTION: Roy City proposes to improve its culinary water system. The proposed action is needed to provide culinary water in the Roy City upper zone with the required pressure, desired quality, and required storage capacity.

The proposed action would include the following components:

- Abandoning an existing well.
- Removing two existing reservoirs and a pump house.
- Installing a well in the Delta Formation at a depth of 1,000 feet.
- Constructing a 2,000,000 gallon reservoir.
- Constructing a pump house with chlorination capability.
- Providing water pipes connecting to an existing Roy City water main.
- Upgrading the existing electrical service to the pump house.

3. SELECTION CRITERIA: The following objectives (selection criteria) were used to assemble alternatives. The facility that accommodates the Roy City water system needs should:

- Provide approximately 60 pounds per square inch (psi) of water pressure in the Roy upper zone.
- Improve drinking water quality related to the dissolved solids, metals, and taste and odor factors.
- Increase culinary water storage to a total of 2,000,000 gallons in the Roy upper zone.
- Not cause a significant impact to human health or the environment.

4. ADDITIONAL ALTERNATIVES: Under the no action alternative, the stated objectives for Roy City to provide culinary water in its upper zone with the required pressure, desired quality, and required storage capacity would not be met. It is not known whether other means of providing water to these customers could be identified. Community growth could eventually be limited. Water shortages could occur. Fire suppression activities could be hampered.

Roy City managers and their design engineers evaluated, but eliminated, other potential locations for siting the improved upper zone facilities. These alternatives were not retained for detailed consideration due to presence of contaminated soils and inability to provide the required water pressure.

5. SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS:

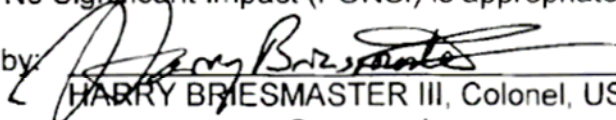
a. Proposed Action: This alternative fully satisfies all applicable regulations and provides for accomplishment of objectives without significant impacts to human health or the environment.

- Temporary construction related emissions would be created. Long-term air emissions would be limited to operating the emergency generator approximately 100 hours per year. Preventive maintenance would reduce the potential for chlorine gas leaks. Emergency responders are available should a chlorine gas leak occur.
- Solid and liquid wastes containing regulated products would all be properly stored, transported, disposed, re-used, and/or recycled. Secondary containment would be provided for 250 gallons of diesel fuel.
- Approximately three acres would be disrupted during construction. Following construction, most of the area would be revegetated using a native-plant based seed mix. The net loss of habitat would be a few thousand square feet.
- During construction, erosion would be controlled by implementing a stormwater pollution prevention plan. The area disturbed by construction activities would be restored to its original condition to prevent long term soil erosion. If contaminated soils exist, they would be properly handled during the construction process.
- Following proper well abandonment and installation procedures would protect the Sunset and Delta Aquifers. Nearby contaminated shallow groundwater would not impact or be impacted by the proposed action. Supplying water from the Delta Aquifer should prevent taste and odor problems from occurring.
- A stormwater pollution prevention plan would be implemented during construction. Roy City holds a current UPDES permit for discharging well development and pump testing water to an existing storm drain.
- Short-term opportunities would exist for local construction workers. Less than one long-term job equivalent would be created. Economic growth could be enhanced for Roy City and the surrounding communities.

b. No Action Alternative: Under the no action alternative, current conditions would continue. Culinary water could be pumped from the Sunset Aquifer should the currently out-of-service facilities be returned to service. This water exhibits taste and odor problems. Shortfalls could occur in water supply, pressure, and quality. Economic growth could be limited for Roy City and surrounding communities.

6. FINDING OF NO SIGNIFICANT IMPACT: Based on the above considerations, a Finding of No Significant Impact (FONSI) is appropriate for this assessment.

Approved by:


HARRY BRIESMASTER III, Colonel, USAF
Commander

Date: 14 Jun 06